

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-24. (canceled)

25. (previously presented) A method for depositing and forming a film coming from an aqueous film-forming polymer dispersion on a surface based on a mineral binder composition while it is still wet, wherein a sufficient quantity of at least one water-soluble amphiphilic copolymer is added to said aqueous film-forming polymer dispersion, the water-soluble amphiphilic copolymer being selected from the group consisting of:

(i) at least one polymer obtained by the polymerization of

at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid, or else a precursor of carboxylic acids of anhydride, whether aliphatic, cyclic, linear or branched, and

of at least one linear or branched, mono-ethylenically unsaturated hydrocarbon monomer (II), this hydrocarbon monomer not being aromatic;

(ii) at least one polymer coming from the polymerization of

at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C₄-C₃₀ hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and

(iii) at least one polymer obtained by

chemical modification of a precursor polymer comprising, on the one hand, sites on which a hydrophobic species can be grafted, this hydrophobic grafted species not being aromatic and comprising, moreover, carboxylic acid units or carboxylic acid precursors.

26. (previously presented) The method as claimed in claim 25, wherein the chemical modification for polymer (iii) is esterification, transesterification or amidification and the sites on which the hydrophobic species can be grafted are carboxylic acid or ester sites.

27. (previously presented) The method as claimed in claim 25, wherein the mineral binders are hydraulic binders or air-setting binders, optionally in the form of slurries or concretes.

28. (previously presented) The method as claimed in claim 27, wherein the hydraulic mineral binders are plasters or cements, optionally Portland, aluminous or blast-furnace slag.

29. (previously presented) The method as claimed in claim 27, wherein the mineral binders are selected from fly ash, calcined schists and natural or synthetic pozzolana.

30. (previously presented) The method as claimed in claim 25, wherein the mineral binders are in the form of moldings or prefabricated components for the construction industry, civil engineering or public works.

31. (previously presented) The method as claimed in claim 30, wherein the moldings or prefabricated components are cement tiles, the cement, optionally fiber-reinforced, cladding panels, fiber cement panels, molded components made of fiber cement, or plasterboards.

32. (currently amended) The method as claimed in claim 25, wherein the aqueous film-forming polymer dispersion (~~latex~~) comprises at least one water-insoluble polymer obtained by the polymerization of monomers selected from the group consisting of:

vinyl esters optionally vinyl acetate;

alkyl acrylates and methacrylates, the alkyl group of which contains 1 to 10 carbon atoms; and

vinylaromatic monomers, optionally styrene;

these monomers being able to be copolymerized with themselves or with other ethylenically unsaturated monomers that can be copolymerized with vinyl acetate and/or acrylic esters and/or styrene, in order to form homopolymers, copolymers or terpolymers.

33. (currently amended) The method as claimed in claim 32, wherein the monomers that can be copolymerized with vinyl acetate and/or acrylic esters and/or styrene are selected from the group consisting of: olefins; vinyl esters of branched or unbranched, saturated monocarboxylic acids having from 1 to 12 carbon atoms; esters of monocarboxylic or dicarboxylic unsaturated acids having 3 to 6 carbon atoms with alkanols having 1 to 10 carbon atoms; vinylaromatic monomers; vinyl halides; diolefins; (meth)allylic esters of (meth)acrylic acid; (meth)allylic esters of monoesters and diesters of maleic, fumaric and itaconic acids; and alkene derivatives of amides of acrylic and methacrylic acids.

34. (currently amended) The method as claimed in claim 33, wherein the monomers that can be copolymerized with vinyl acetate and/or acrylic esters and/or styrene are selected from the group consisting of: ethylene; isobutene; vinyl propionate; vinyl "Versatake" (registered trademark for esters of C₉-C₁₁ branched acids); vinyl pivalate; vinyl laurate; methyl, ethyl, butyl and ethylhexyl maleates and fumarates; methylstyrene; vinyltoluene; vinyl chloride; and vinylidene chloride; butadiene; or and N-methallylmaleimide.

35. (currently amended) The method as claimed in either of claim 33, wherein the aqueous film-forming polymer dispersion (~~latex~~) comprises at least one water-insoluble polymer obtained by the polymerization of monomers which are alkyl acrylates or methacrylates, the alkyl group of which contains 1 to 10 carbon atoms, optionally methyl, ethyl, n-butyl and 2-ethylhexyl acrylates or methacrylates.

36. (currently amended) A method for depositing and forming a film coming from an aqueous film-forming polymer dispersion on a surface based on a mineral binder composition while it is still wet, wherein a sufficient quantity of at least one water-soluble amphiphilic copolymer is added to said aqueous film-forming polymer dispersion, the water-soluble amphiphilic copolymer being selected from the group consisting of:

(i) at least one polymer obtained by the polymerization of

at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid, or else a precursor of carboxylic acids or anhydride, whether aliphatic, cyclic, linear or branched, and

of at least one linear or branched, mono-ethylenically unsaturated monomer (II), this monomer not being aromatic;

(ii) at least one polymer coming from the polymerization of

at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C₄-C₃₀ hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and

(iii) at least one polymer obtained by

chemical modification of a precursor polymer comprising, on the one hand, sites on which a hydrophobic species can be grafted, this hydrophobic grafted species not being aromatic and comprising, moreover, carboxylic acid units or carboxylic acid precursors

The method as claimed in claim 25, wherein, in variant (i): the monomer (I) has the following formula: (R¹)(R¹)C=C(R¹)--COOH (I) in which formula: the radicals R¹, R¹, which are the same or different, ~~represents are selected from the group consisting of:~~ a hydrogen atom, a C₁-C₁₀ hydrocarbon radical optionally containing a --COOH group, ~~and~~ a --COOH group; and the monomer of formula (II) has the following formula: (R²)(R³)C=C(R⁵)(R⁶) (II) in which formula: the radical R² ~~represents is selected from the group consisting of:~~ a hydrogen atom, ~~and~~ a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms; the radical R³ ~~represents is selected from the group consisting of:~~ a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms, ~~or and~~ an --OR⁴ radical, ~~that is to say wherein R³ is a vinyl ether, and where R⁴ represents a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms; the radical R⁵ represents is selected from the group consisting of:~~ a hydrogen atom ~~or and~~ a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms; and the radical R⁶ ~~represents is selected from the group consisting of:~~ a hydrogen atom ~~or and~~ a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms, ; with the proviso that at least one of the radicals R², R³, R⁵ or R⁶ represents a C₁-C₁₀, linear or branched, alkyl radical optionally substituted with heteroatoms.

37. (currently amended) The method as claimed in claim 36, wherein the monomer of formula (I) is such that:

one of the radicals R¹ is a hydrogen atom;

the other radical R¹ ~~represents~~ is selected from the group consisting of: a hydrogen atom, a --COOH group ~~or~~ and a --(CH₂)_nCOOH group in which n is between 1 and 4, or a C₁-C₄ alkyl radical; and

R¹ ~~represents~~ is selected from the group consisting of: a hydrogen atom, a --(CH₂)_mCOOH group in which m is between 1 and 4, ~~or~~ and a C₁-C₄ alkyl radical.

38. (currently amended) The method as claimed in claim 37, wherein the monomer of formula (I) is such that:

one of the radicals R¹ represents a hydrogen atom;

the other radical R¹ ~~represents~~ is selected from the group consisting of: a hydrogen atom, a --COOH or (CH₂)COOH group, ~~and~~ or a methyl radical; and

R¹ ~~represents~~ is selected from the group consisting of: a hydrogen atom, a --CH₂COOH group ~~or~~ and a methyl radical.

39. (previously presented) The method as claimed in claim 38, wherein the monomer of formula (I) is selected from the group consisting of acrylic, methacrylic, citraconic, maleic, fumaric, itaconic, crotonic acids and anhydrides.

40. (previously presented) The method as claimed in claim 39, wherein the monomer of formula (I) is maleic anhydride.

41. (previously presented) The method as claimed in claim 36, wherein the monomer of formula (II) is ethylene, propylene, 1-butene, isobutylene, n-1-pentene, 2-methyl-1-butene, n-1-hexene, 2-methyl-1-pentene, 4-methyl-1-pentene, 2-ethyl-1-butene, diisobutylene (or 2,4,4-trimethyl-1-pentene), 2-methyl-3,3-dimethyl-1-pentene, isobutyl vinyl ether, methyl vinyl ether, 1-menthyl vinyl ether, phenyl vinyl ether or octadecyl vinyl ether.

42. (previously presented) The method as claimed in claim 35, wherein the copolymer of formula (i) results from the polymerization of maleic anhydride and isobutylene.

43. (previously presented) The method as claimed in claim 25, wherein the sufficient amount of water-soluble amphiphilic copolymer added to the aqueous film-forming polymer dispersion (latex) is between 0.3 and 5%, optionally between 0.5 and 1.5%, by weight of dry water-soluble amphiphilic copolymer relative to the weight of dry latex.

44. (previously presented) A mineral binder composition, the surface of which is at least partly covered with a film resulting from the drying of a composition comprising an aqueous film-forming polymer emulsion and at least one water-soluble amphiphilic copolymer, said water-soluble amphiphilic copolymer being selected from the group consisting of:

- (i) at least one polymer obtained by the polymerization
 - of at least one ethylenically unsaturated monomer (I) of monocarboxylic or polycarboxylic acid, or else a precursor of carboxylic acids or anhydride, whether aliphatic, cyclic, linear or branched, and
 - of at least one linear or branched, mono-ethylenically unsaturated hydrocarbon monomer (II), this hydrocarbon monomer not being aromatic;
- (ii) at least one polymer coming from the polymerization of at least one monocarboxylic or polycarboxylic acid monomer (I), or anhydride, whether aliphatic, cyclic, linear or branched, which is ethylenically unsaturated and includes at least one hydrophobic, saturated or unsaturated, C₄-C₃₀ hydrocarbon grafted species, optionally interrupted by one or more heteroatoms, this hydrophobic grafted species not being aromatic; and
- (iii) at least one polymer obtained by chemical modification of a precursor polymer comprising, on the one hand, sites on which a hydrophobic species can be grafted, this hydrophobic grafted species not being aromatic and comprising, moreover, carboxylic acid units or carboxylic acid precursors.

45. (currently amended) The mineral binder as claimed in claim 44, wherein the chemical modification for polymer (iii) is esterification, transesterification or amidification and the sites on which the hydrophobic species can be grafted are carboxylic acid or ester sites.

46. (previously presented) The mineral binder composition as claimed in claim 44, wherein the mineral binders are in the form of moldings or prefabricated components.

47. (previously presented) The mineral binder composition as claimed in claim 46, wherein the mineral binders are cement tiles, fiber-reinforced cement tiles, cladding panels, fiber cement panels, molded components made of fiber cement, or plasterboards.